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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/780,430	02/17/2004	Ricardo Feced	920476-95571	2016
23644 7590 09/12/2007 BARNES & THORNBURG LLP P.O. BOX 2786 CHICAGO, IL 60690-2786			EXAMINER SEDIGHIAN, REZA	
			ART UNIT 2613	PAPER NUMBER
			MAIL DATE 09/12/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/780,430

Applicant(s)

FECED ET AL.

Examiner

M. R. Sedighian

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 18-20 is/are allowed.
- 6) ☒ Claim(s) 1,5-7,9, 11,14-23 and 25 is/are rejected.
- 7) ☒ Claim(s) 2-4,8, 10,12,13 and 24 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 10/12/04.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_.

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1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “a demodulator for demodulating optical orthogonal frequency division multiplexed signals using each of the subcarrier reference signals; a decoder for decoding after the demodulation, by determining from the corresponding other data values; an encoder for encoding the data values by carrying out a mapping in a complex frequency domain according to corresponding others of the data values; must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

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2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 9 and 18-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claim 9, it is not clear what is meant by "... a decoder for decoding by using the other data values to determine an amount of rotation of the received data values, needed to decode the data values". What are the other data values, and the received data values??

As to claim 18, it is not clear what is meant by "... a decoder for decoding after the demodulating, by determining from the corresponding other data values, an inverse mapping in the complex frequency domain needed to decode the data values". What does it mean by the corresponding other data values?? What are the other data values??

As to claim 21, it is not clear what is meant by "... an encoder for encoding the data values by carrying out a mapping in the complex frequency domain according to corresponding others of the data values," What does it mean by corresponding others of the data values?? What are the other data values??

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this

subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claim 1, 5-7, 11, 14-17, 23, and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Stuart (US Patent No: 7,218,850 B2).

Regarding claims 1, 11, 15, 17, 23, and 25, Stuart teaches an optical receiver (604, 605, fig. 7) arranged to receive (604, fig. 7) and demodulate (210, fig. 7) optical orthogonal frequency division multiplexed signals (WDM INPUT, fig. 7 and col. 6, lines 10-23), and having a subcarrier reference generator (701, fig. 7) arranged to generate a number of subcarrier reference signals (col. 5, lines 1-7), each for use in demodulating (210, fig. 7) a different one of a number of frequency channels (col. 2, lines 65-67, col. 3, lines 1-3, col. 6, lines 59-67, col. 7, lines 1-7 and I and Q, fig. 7) of the frequency division multiplexed signals (WDM INPUT, fig. 7), wherein the subcarrier reference generator (701, fig. 7) further being arranged to compensate for degradations in the generated reference signals by averaging (609, fig. 7) a number of estimates derived from different inputs (col. 7, lines 1-11).

Regarding claim 6, Stuart teaches the optical receiver (604, 605, fig. 7) is arranged to demodulate (210, fig. 7) non differentially coded optical orthogonal frequency division multiplexed signals (col. 6, lines 10-23).

Regarding claim 7, Stuart teaches the generator (701, fig. 7) being arranged to generate the estimated reference signals by stripping detected data from a received signal for each channel (col. 7, lines 52-67).

Regarding claim 14, Stuart teaches a demodulator (210, fig. 7) in the form of a software (col. 6, lines 18-19).

Regarding claims 5 and 16, Stuart teaches demodulating (210, fig. 7) differentially coded optical orthogonal frequency division multiplexed signals and being arranged to operate without using a transmitted pilot tone (col. 2, lines 65-67, col. 3, lines 1-3, col. 6, lines 59-67, col. 7, lines 1-7, note that demodulation is being arranged without using a transmitted pilot tone).

6. Claim 21 is rejected under 35 U.S.C. 102(e) as being anticipated by Way et al. (US Patent No: 7,003,231 B2).

Regarding claim 21, Way teaches an optical transmitter (col. 10, lines 15-25, fig. 4c and 72, fig. 4C and 168, fig. 8) arranged to transmit an optical orthogonal frequency division multiplexed signal carrying QAM data values (col. 10, lines 30-35), the transmitter having: an encoder (col. 10, lines 30-35 and 96, fig. 4C and 124, fig. 8) for encoding the data values by carrying out a mapping in a complex frequency domain according to corresponding others of the data values (col. 13, lines 13-19), and a modulator (col. 9, lines 38-41, col. 13, lines 30-32 and 64, fig. 4C and 170, fig. 8) for modulating the encoded data values to form the optical orthogonal frequency division multiplexed signal having a number of frequency channels (col. 9, lines 30-42, col. 10, lines 15-20, 30-35).

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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8. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Way et al. (US Patent No: 7,003,231 B2) in view of Nakamura (US Patent No: 5,168,509).

Regarding claim 22, Way differs from the claimed invention in that Way does not disclose mapping comprising a rotation. Nakamura discloses a multi-level QAM communication system with encoding and signal rotation (col. 5, lines 36-43). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate a method QAM modulation and signal rotation, as it is taught by Nakamura, for the QAM data transmission system of Way to provide a QAM communication system capable of increasing signal transmission reliability (Nakamura, col. 1, lines 8-15).

9. Claims 2-4, 8, 10, 12-13, and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.


10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. R. Sedighian whose telephone number is (571) 272-3034. The examiner can normally be reached on 9 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
**M. R. SEDIGHIAN**  
**PRIMARY EXAMINER**